High-Definition
Network Speed Dome

Installation Manual

Thank you for purchasing our product. If there is any question or request, please do not hesitate to contact the dealer.

This manual is applicable to High-Definition Network Speed Dome.

This manual may contain several technically inaccurate points or printing errors, and the content is subject to change without notice. The updates will be added into the new version of this manual. We will readily improve or update the products or procedures described in the manual.

Regulatory Information

FCC Information

FCC compliance: This equipment has been tested and found to comply with the limits for a digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

EU Conformity Statement

CE This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Low Voltage Directive 2006/95/EC, the EMC Directive 2004/108/EC, the RoHS Directive 2011/65/EU.

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss. The precaution measure is divided into **Warnings** and **Cautions**:

Warnings: Neglecting any of the warnings may cause serious injury or death.

Cautions: Neglecting any of the cautions may cause injury or equipment damage.

Warnings: Follow these safeguards to prevent serious injury or death.	**Cautions**: Follow these precautions to prevent potential injury or material damage.

Warnings

- In the use of the product, you must be strict compliance with the electrical safety regulations of the nation and region.
- Please use the power adapter, which is provided by normal company. The standard of the power adapter is AC24V±10%. The power consumption cannot be less than the required value.
- Do not connect several devices to one power adapter as adapter overload may cause over-heat or fire hazard.
- Please make sure that the plug is firmly connected on the power socket.
- When the product is installed on wall or ceiling, the device shall be firmly fixed.
- If smoke, odors or noise rise from the device, turn off the power at once and unplug the power cable, and then please contact the service center.
- If the product does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the camera yourself. (We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.)

Cautions

- Do not drop the dome or subject it to physical shock, and do not expose it to high electromagnetism radiation. Avoid the equipment installation on vibrations surface or places subject to shock (ignorance can cause equipment damage).
- Do not place the dome in extremely hot, cold, dusty or damp locations, otherwise fire or electrical shock will occur. The operating temperature should be -30°C ~ 65°C (outdoor speed dome) and -10°C ~ 50°C (indoor speed dome).
- The dome cover for indoor use shall be kept from rain and moisture.
- Exposing the equipment to direct sun light, low ventilation or heat source such as heater or radiator is forbidden (ignorance can cause fire danger).
- Do not aim the camera at the sun or extra bright places. A blooming or smear may occur otherwise (which is not a malfunction however), and affecting the endurance of sensor at the

same time.

- Please use the provided glove when open up the dome cover, avoid direct contact with the dome cover, because the acidic sweat of the fingers may erode the surface coating of the dome cover.
- Please use a soft and dry cloth when clean inside and outside surfaces of the dome cover, do not use alkaline detergents.

Preparation for Installation

- Basic requirements.
  - ♦ All the electronic operation should be strictly compliance with the electrical safety regulations, fire prevention regulations and other related regulations in your local region.
  - ♦ Check whether all the accessories are included and make sure that the installation place and mode conform to the demands. If not, please contact the supplier.
  - ♦ Please use this product according to the requirement of working environment.
- Check installation space.
  Make sure the place have enough space to install the speed domes and its accessories.
- Check the intensity of conformation at the installation location.
  Please make sure that the ceilings or walls are strong enough to withstand required times the weight of speed dome and its accessories.
- Preparation of cables.
  - ♦ For analog speed dome, choose the video cable according to the transmission distance. The video should meet the least demands as: 75Ω resistance; 100% copper core conducting wire; 95% weaving copper shield.
  - ♦ For analog speed dome, RS485 communication cable, please refer to Appendix 2.
  - ♦ 24V AC power cable, please refer to Appendix 3.
- Please keep all wrappers.
  Please keep all wrappers after unpack them for future use. In case of any failure occurred, you need to return the speed dome to the factory with the original wrapper.
  Note: Transportation without the original wrapper may result in damage on the speed dome and lead to additional costs.

Table of Contents

Chapter 1 Installation

Before you start:

Check the package contents and make sure that the device in the package is in good condition and all the assembly parts are included.

1.1 Installation and Cabling

1.1.1 Installing the Speed Dome

There are several ways to install the speed dome. The wall mounting is taken as an example below.

Steps:

1. Loosen the two lock screws as shown in the following figure.
2. Remove the lower dome.

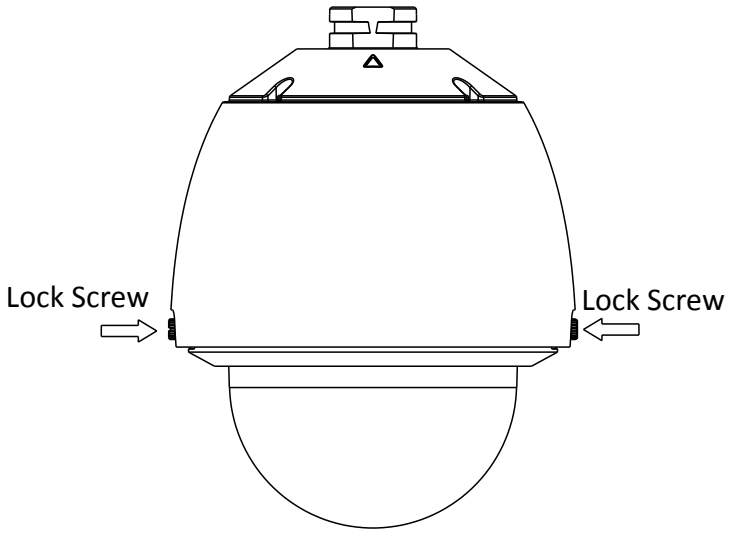


Figure 1-1 Disassemble the Speed Dome

3. Remove the protective lens cover, foam and sticker as shown in the following figure.
4. Set the address and baud rate for the analog speed dome. Please refer to the Section ***1.2 DIP Switch Settings*** for DIP switch settings.
5. Install the lower dome back and tighten the two lock screws.

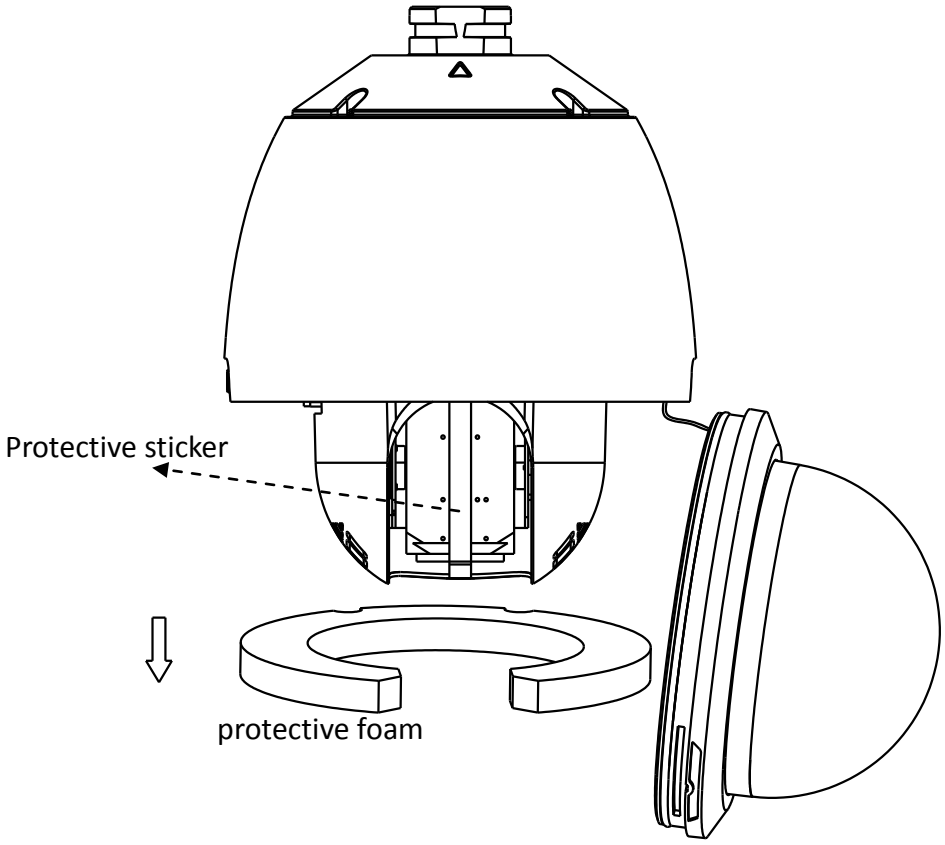


Figure 1-2 Disassemble the Speed Dome

6. Drill four M8 screw holes on the wall according to the screw holes of the wall mount.
7. Secure the wall mount to the wall with screws.

Notes:

- For cement wall mounting, you need to use the expansion screw to fix the mount. The mounting hole of the expansion pipe on the wall should align with the mounting hole on the mount.
- For wooden wall mounting, you can just use the self-tapping screw to fix the bracket.

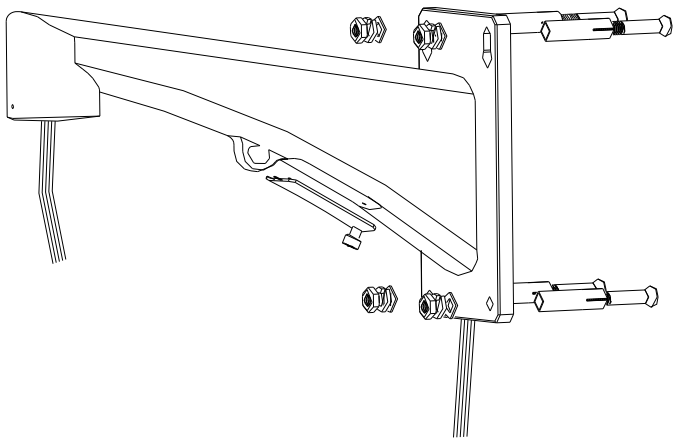


Figure 1-3 Install the Wall Mount

8. Wrap the thread part with the thread tape and rotate the pendant adapter to the wall mount.
9. Secure the pendant adapter to the wall mount with a set screw (supplied) as shown in Figure 1-5.

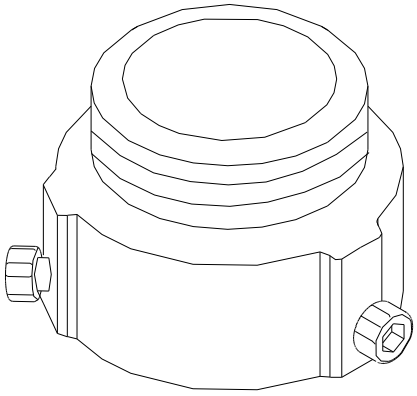


Figure 1-4 Install the Pendant Adapter

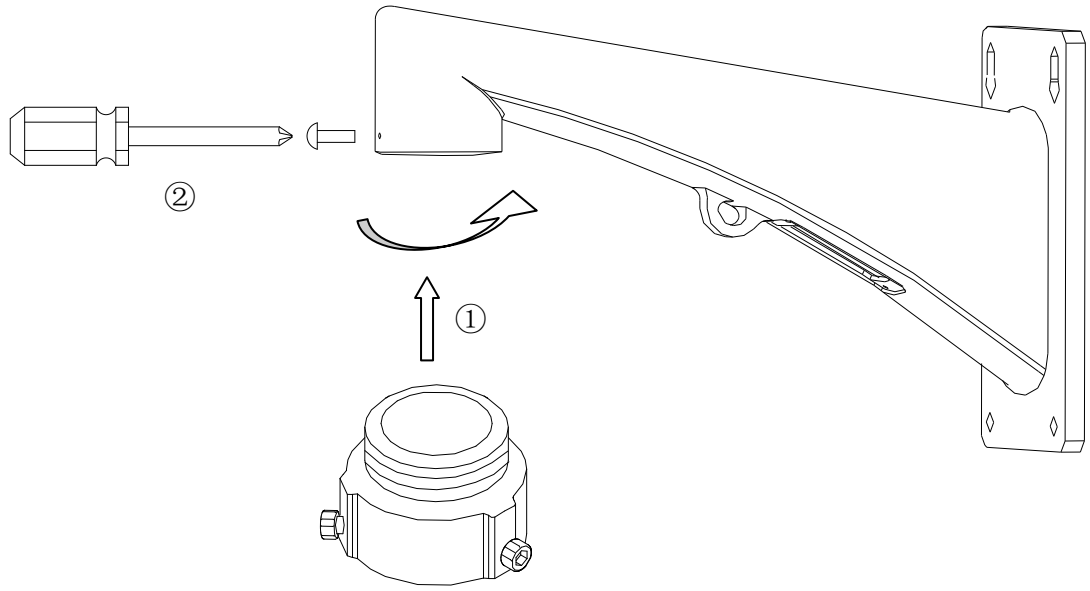


Figure 1-5 Install the Pendant Adapter

10. Hook the two ends of the safety rope to the back box of the speed dome and the wall mount respectively. Route the cables through the mount.
11. Loosen the lock screws of the adapter as shown below.

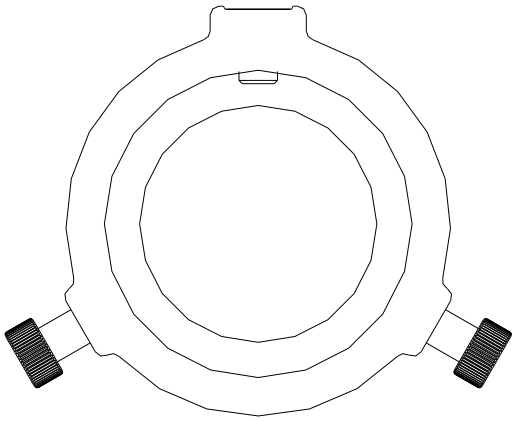


Figure 1-6 Pendant Adapter

12. Align the direction label of pendant adapter with the label of the back box to install the speed dome as shown below.

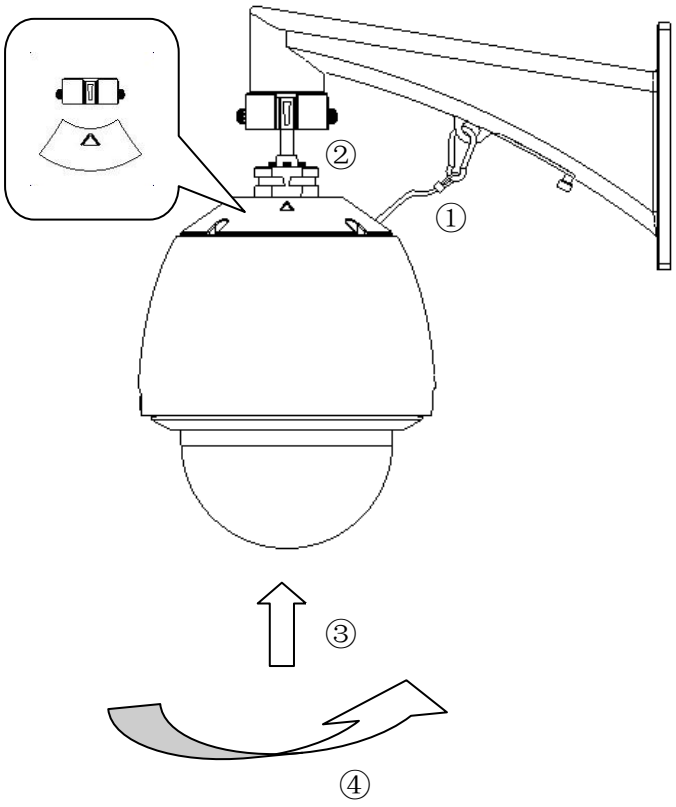


Figure 1-7 Align the Labels

13. Rotate the back box counterclockwise or clockwise tightly. Secure the back box and the pendant adapter with the two lock screws.

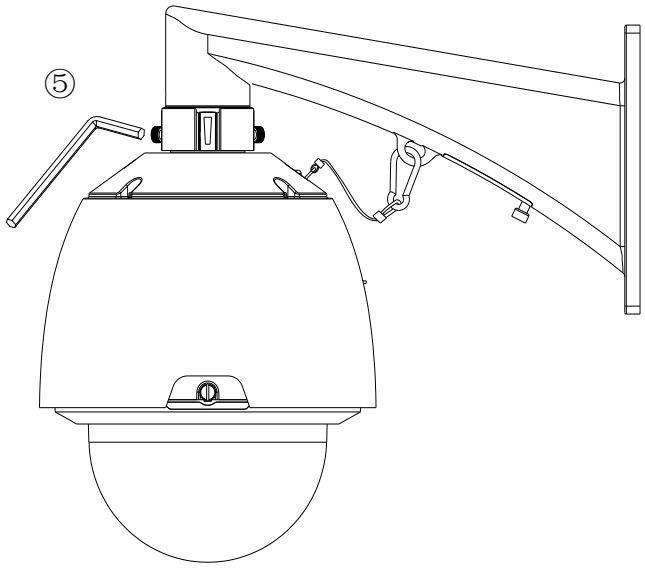


Figure 1-8 Tighten the Lock Screws

1.1.2 Connecting the Cables

Before you start:

Please make sure to turn off the power of the dome before connect the cables.

The cable interfaces of analog speed dome and network speed dome are shown in Figure 1-9 and Figure 1-10. The cables of RS-485, power supply, etc. are distinguished by different colors. Please refer to the labels attached on the cables for identification.

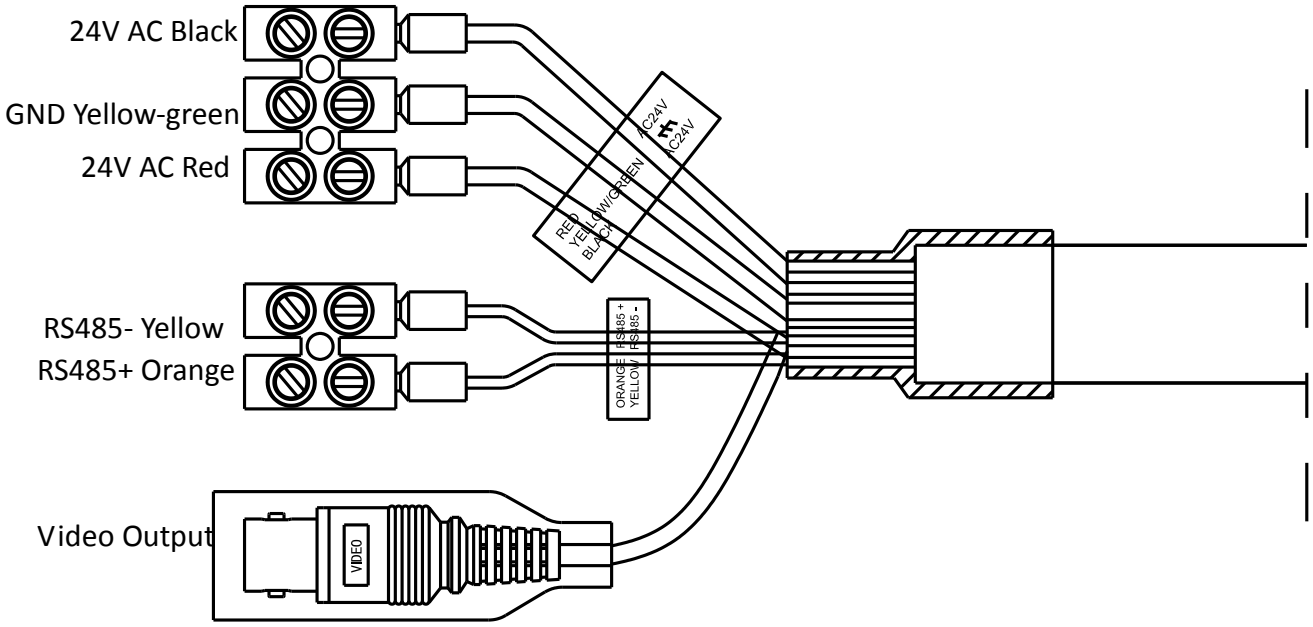


Figure 1-9 Cables of Analog Speed Dome

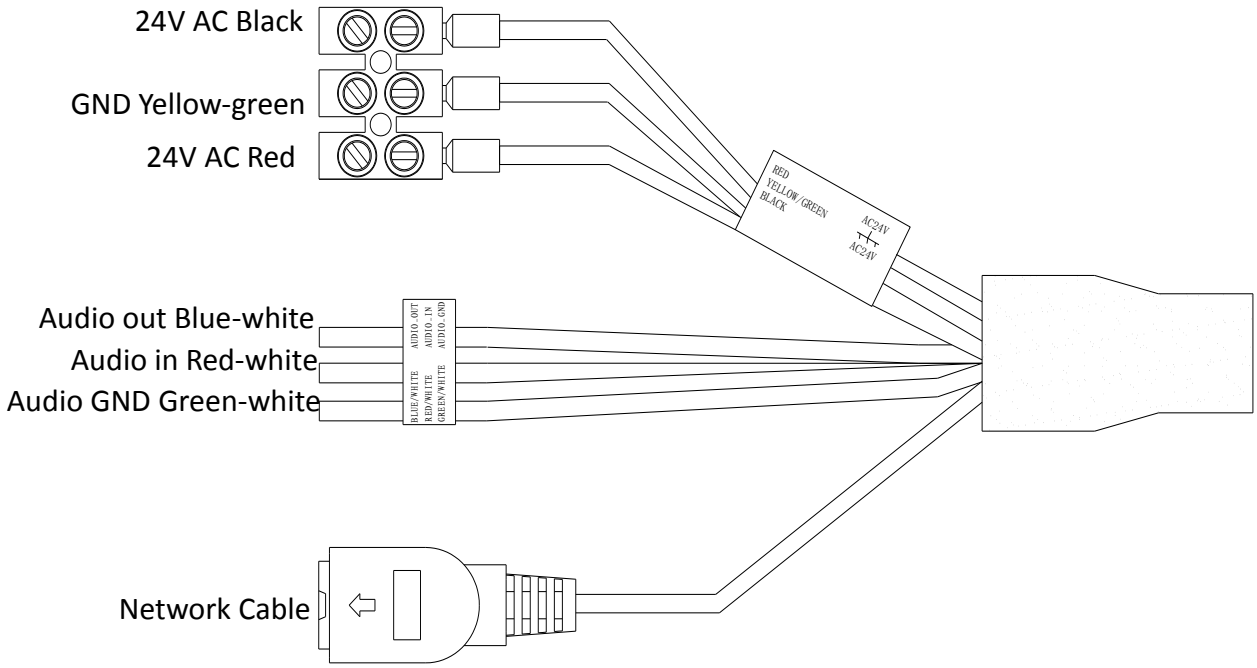


Figure 1-10 Cables of Network Speed Dome

1.2 DIP Switch Settings

Note: This section is only for analog speed dome.

The DIP switch is used for setting the address and baud rate for the speed dome, with value ON=1 and OFF=0, as shown in Figure 1-11.

The SW1 switches from the first to the eighth are used to set the address. The SW2 switches are used to set the baud rate. Please refer to the section 1.2.1 and 1.2.2 for detailed settings.

Notes:

- The default dome address is 0. The default baud rate is 2400.
- The speed dome is self-adaptive to the Pelco-P, Pelco-D and Private-Code. You don't have to set the RS-485 control protocol by the DIP switch.

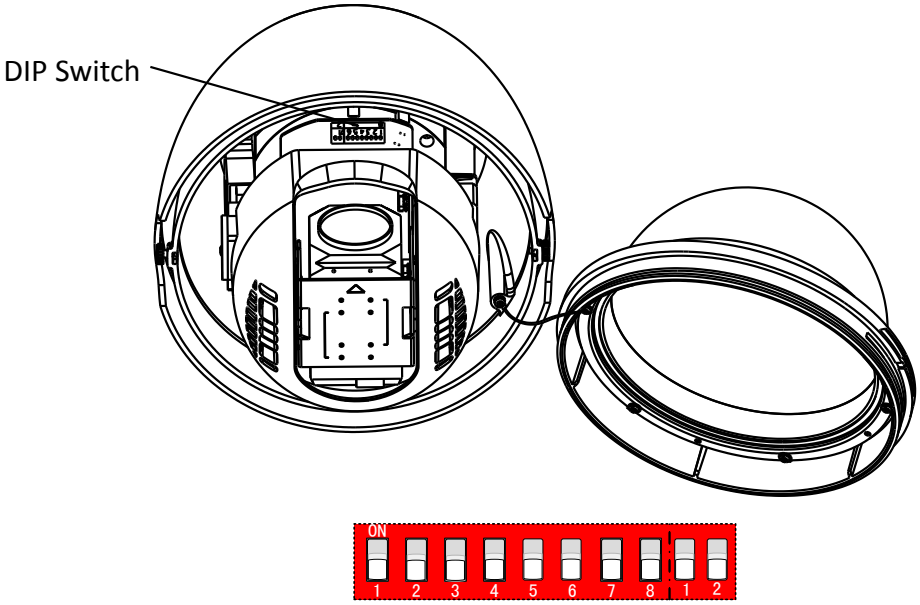


Figure 1-11 DIP Switch Settings

1.2.1 Address Settings

The SW1-switches from 1 to 8 are used for setting the address of speed dome. You can refer to Table 1-1 for details of setting the speed dome address to a specific number.

Table 1-1 Set the Dome Address between 0 and 31

Switch Number / Dome Address	1	2	3	4	5	6	7	8
0	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF
19	ON	ON	OFF	OFF	ON	OFF	OFF	OFF
20	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
21	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
22	OFF	ON	ON	OFF	ON	OFF	OFF	OFF
23	ON	ON	ON	OFF	ON	OFF	OFF	OFF
24	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
25	ON	OFF	OFF	ON	ON	OFF	OFF	OFF
26	OFF	ON	OFF	ON	ON	OFF	OFF	OFF
27	ON	ON	OFF	ON	ON	OFF	OFF	OFF
28	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
29	ON	OFF	ON	ON	ON	OFF	OFF	OFF
30	OFF	ON	ON	ON	ON	OFF	OFF	OFF
31	ON	ON	ON	ON	ON	OFF	OFF	OFF
…	…	…	…	…	…	…	…	…
255	ON	ON	ON	ON	ON	ON	ON	ON

1.2.2 Baud rate Settings

The number 1 and 2 SW2-switches are used for setting the baud rate of the speed dome. The baud rate can be 2400bps, 4800bps, 9600bps and 19200bps. The baud rate will be set as 2400bps by default if it is out of this range. Refer to the following table:

Table 1-2 Set the Baud rate of the Dome

Switch Number / Baud rate	1	2
2400	OFF	OFF
4800	ON	OFF
9600	OFF	ON
19200	ON	ON

Chapter 2 Mount Dimension

2.1 Long-arm Wall Mount

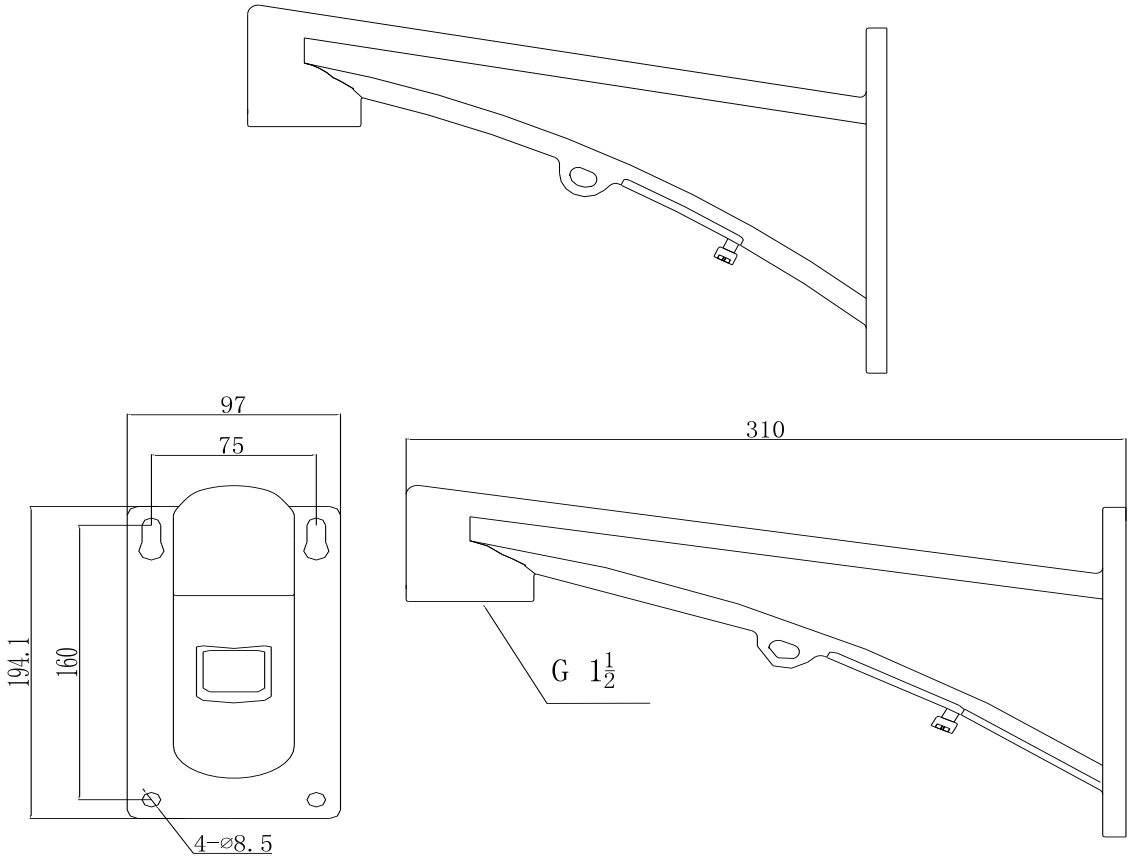
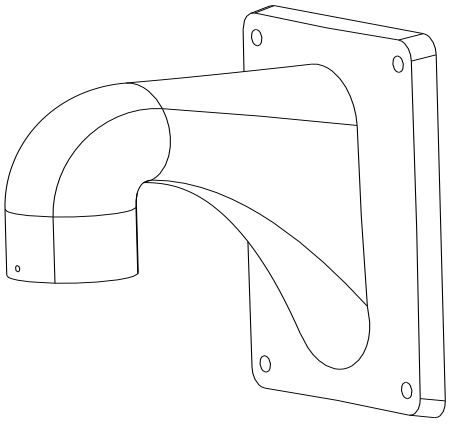


Figure 2-1 Long-arm Wall Mount

2.2 Short-arm Wall Mount



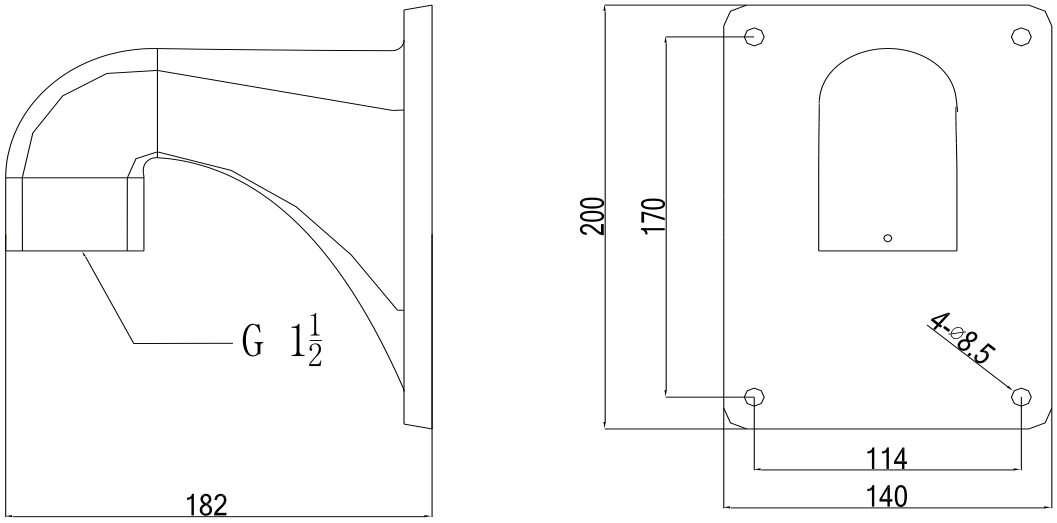


Figure 2-2 Short-arm Wall Mount

2.3 Corner Adapter

Please use the wall mount with corner adapter according to your demand.

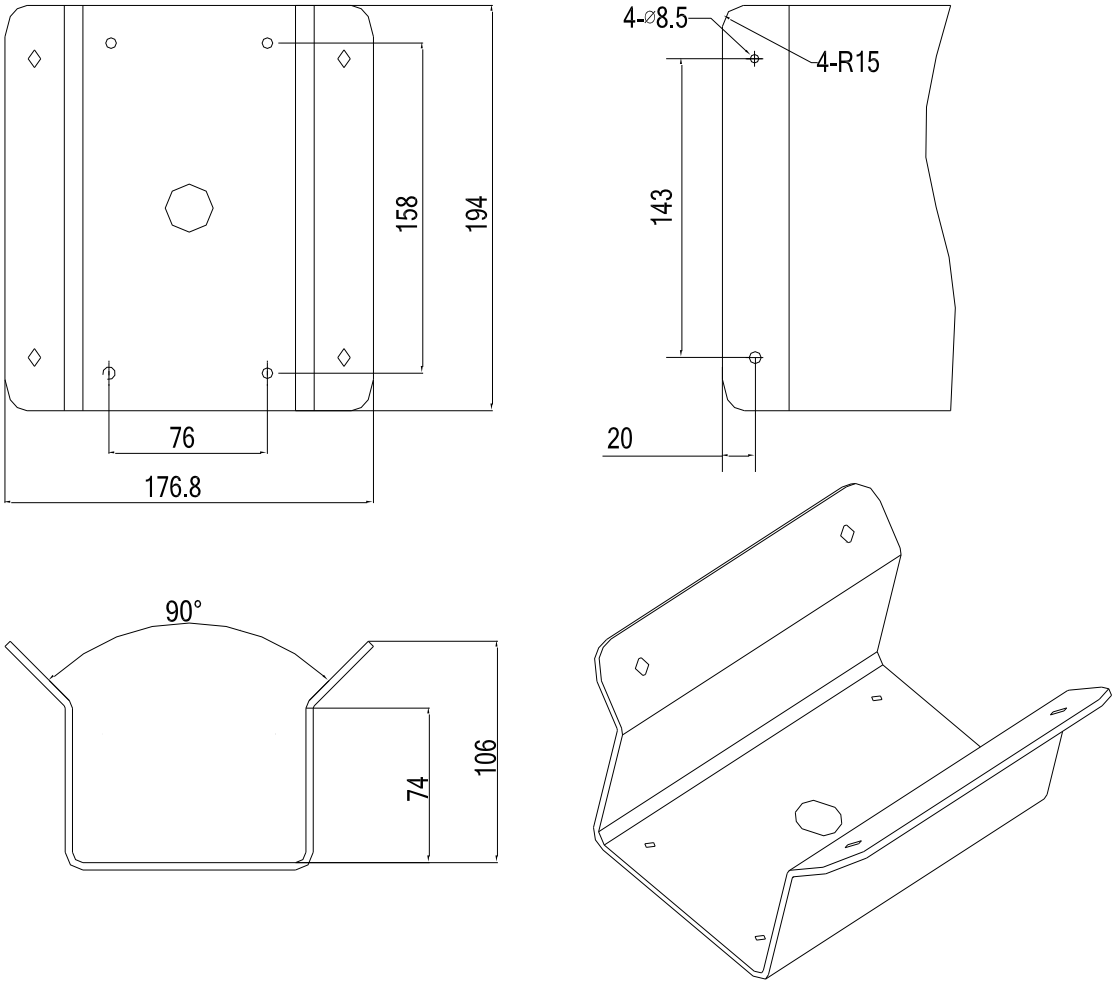


Figure 2-3 Corner Adapter

2.4 Pole Adapter

Please use the wall mount with pole adapter according to your demand.

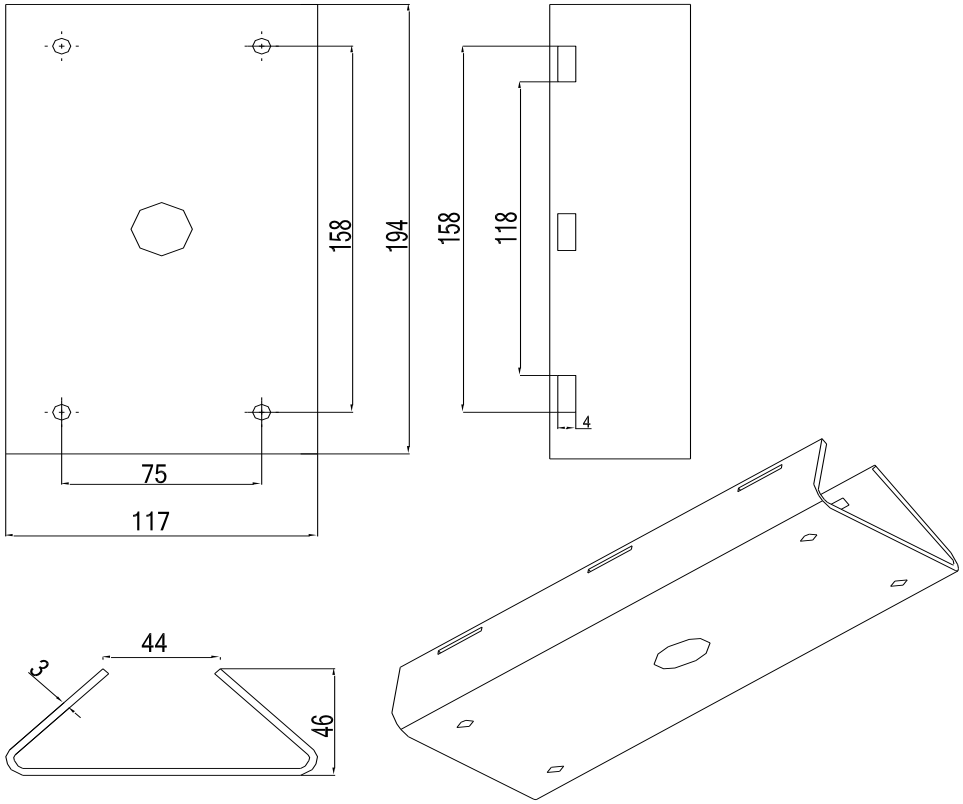


Figure 2-4 Pole Adapter

Chapter 3 Mounting Applications

Before you start:

- For cement wall, you need to use the expansion screw to fix the mount. The mounting hole of the expansion pipe on the wall should align with the mounting hole on the mount.
- For wooden wall, you can just use the self-tapping screw to fix the mount.

3.1 Wall Mounting Applications

3.1.1 Mounting Components

- **Wall Mount**

Applicable to indoor/outdoor pendant domes.

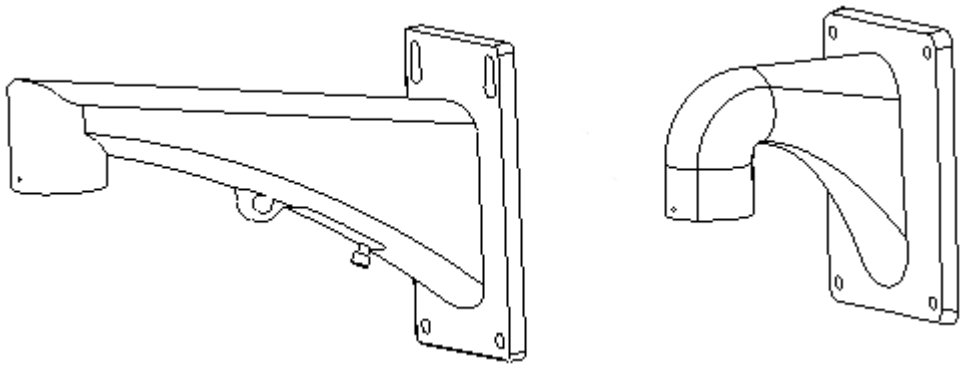


Figure 3-1 Wall Mount

- **Mounting Accessories**

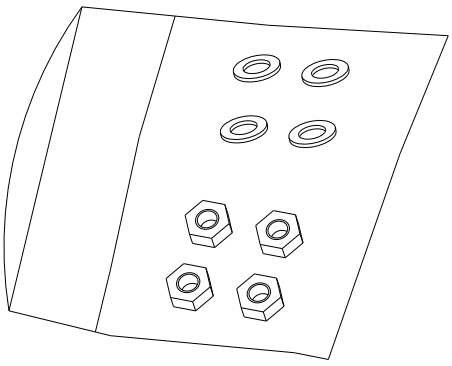


Figure 3-2 Nuts and Flat Washers

3.1.2 Wall Mounting

Before you start:

Wall mounting is applicable to the indoor/outdoor solid wall construction. The followings are the mandatory precondition for wall mounting:

- The wall must be thick enough to install the expansion screws.
- Please make sure that the wall is strong enough to withstand more than 8 times the weight of the dome and the mount.

Steps:

1. Drill 4 screw holes in the wall according to the holes of the mount, and then insert M8 expansion screws (not supplied) into the mounting holes.

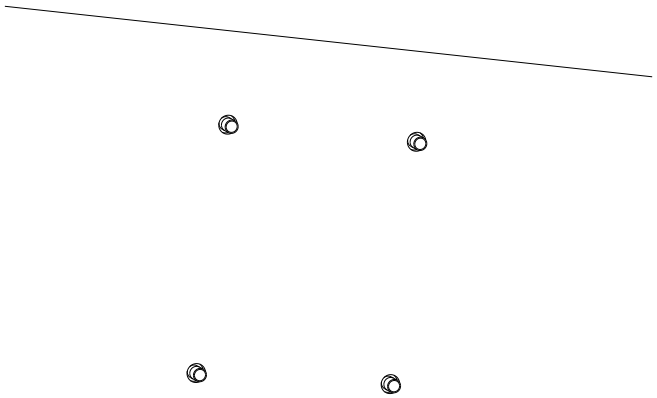


Figure 3-3 Drill Mounting Holes

2. Attach the gasket(not supplied) then wall mount to the wall by aligning the 4 screw holes of the mount with expansion screws on the wall.
3. Secure the wall mount with 4 hex nuts and washers.

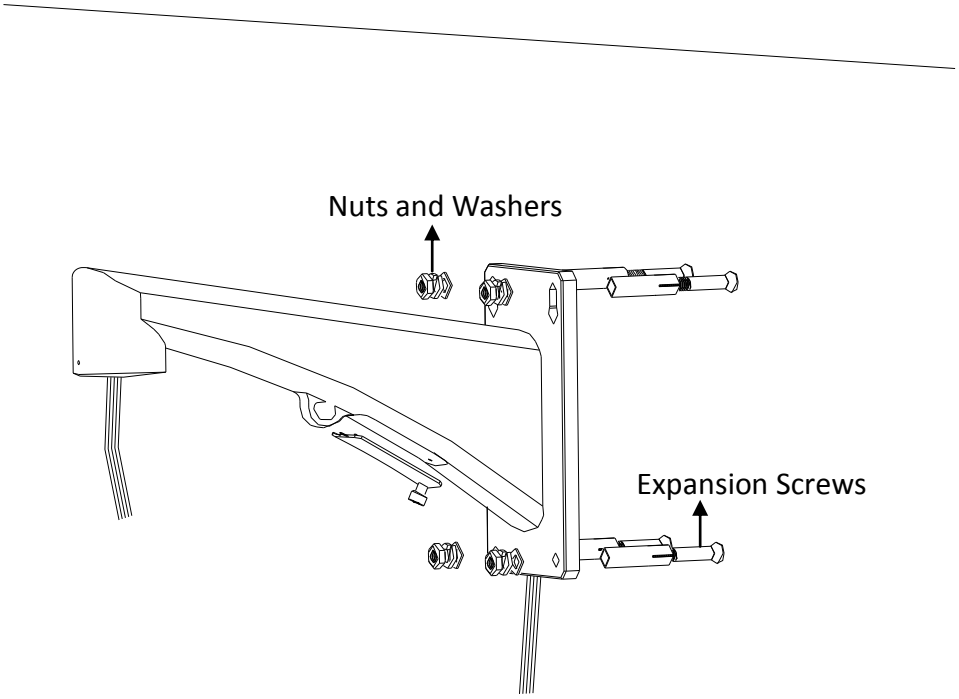


Figure 3-4 Secure the Mount

4. Install the speed dome to the mount. Please refer to *Section* ***1.1 Installation and Cabling*** for installation details.

Note: Follow the same instructions described above for the short-arm wall mounting. For outdoor applications, please adopt the water-proof measures. The short-arm wall mount is not recommended for outdoor applications.

3.2 Corner Mounting Applications

3.2.3 Mounting Components

- **Wall Mount**

You can use the wall mount with corner adapter or pole adapter according to different installation environments.

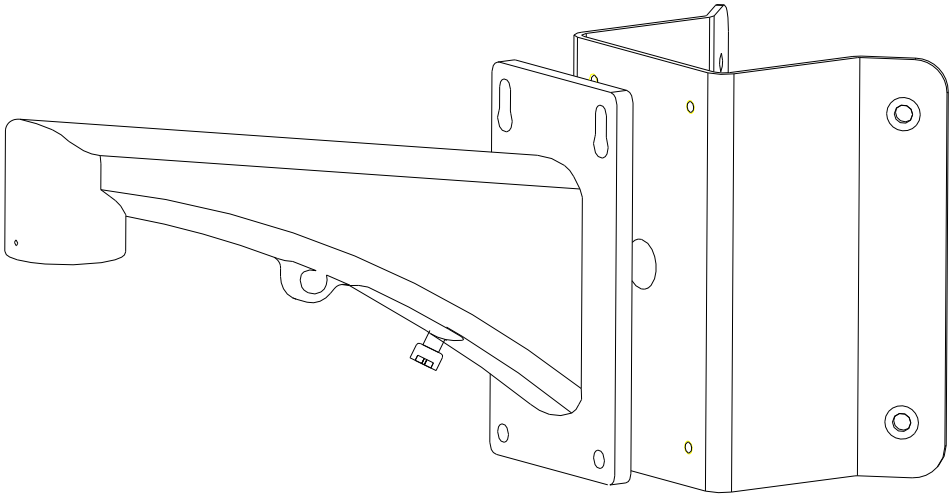


Figure 3-5 Wall Mount

- **Corner Adapter**

Please use the corner adapter with the wall mount in the corner mounting applications.

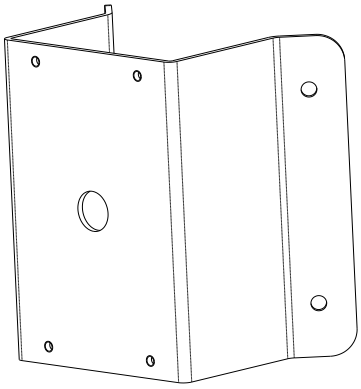


Figure 3-6 Corner Adapter

- **Mounting Accessories**

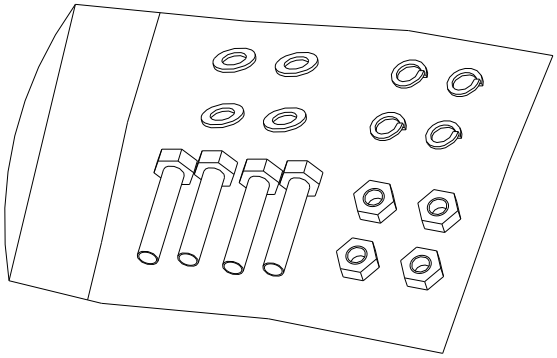


Figure 3-7 Hex Screws (M8×30), Nuts, Spring Washers and Flat Washers

3.2.4 Corner Mounting

Before you start:

The corner mounting is applicable to the indoor/outdoor 90° solid corner construction. The followings are the mandatory precondition for corner mounting:

- The wall must be thick enough to install the expansion screws.
- The wall must be strong enough to withstand more than 8 times the weight of the dome and its accessories.

Steps:

1. Install the corner adapter.

   Steps:

   (1) Drill four holes in the corner according to the screw holes of the corner adapter, and then insert M8 expansion screws (not supplied) into the holes.

   (2) Pull the power line, video cable and control line through the center hole of the corner adapter.

   (3) Attach the corner adapter to the corner by aligning the 4 screw holes of the corner adapter with expansion screws on the corner.

   (4) Secure the corner adapter to the corner with the nuts and washers to tighten the four expansion screws.

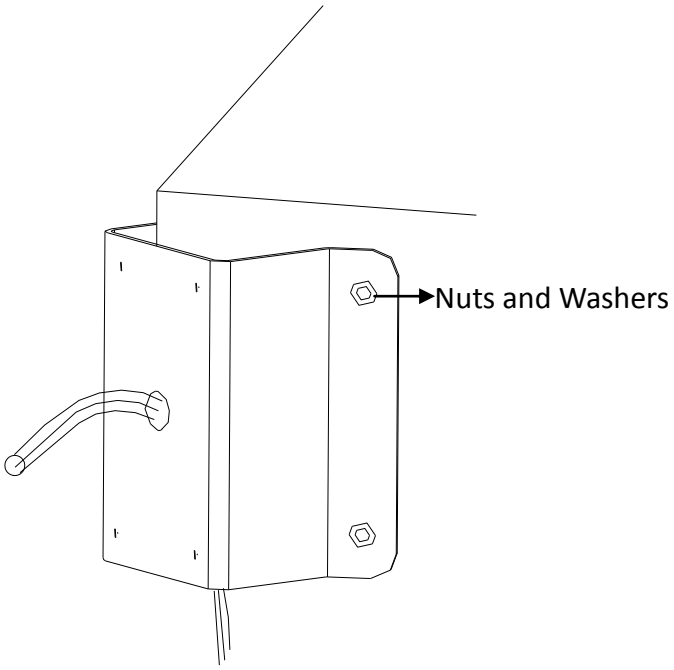


Figure 3-8 Pull the Power Line

Note: Make sure that the cables have enough length. For outdoor applications, please apply the sealant around the center hole for waterproof.

2. Attach the gasket then the wall mount to the corner adapter.
3. Secure the wall mount to the corner adapter with 4 hex screws and spring washers.

Note: When tightening the screw, it is better to compress the spring washer tightly first and then rotate it half-turn for water-proof without damaging the threads.

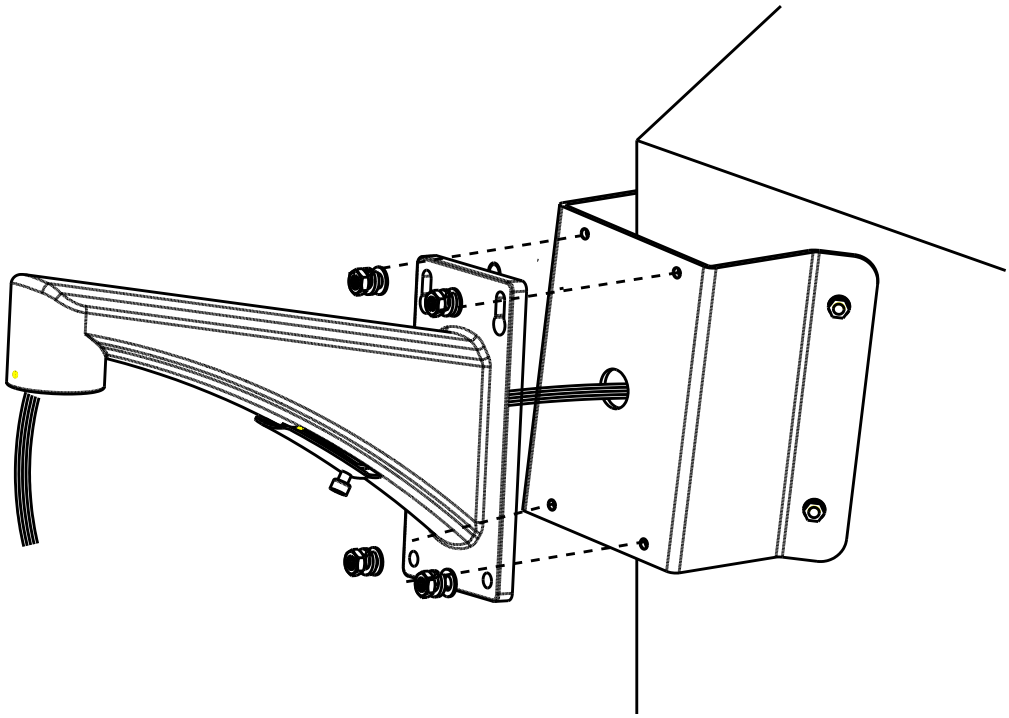


Figure 3-9 Secure the Wall Mount to the Corner

4. Install dome to the mount. Please refer to *Section **1.1 Installation and Cabling*** for installation details.

Note: Follow the same instructions described above for the short-arm wall mounting. For outdoor applications, please adopt the water-proof measures. The short-arm wall mount is not recommended for outdoor applications.

3.3 Pole Mounting Applications

3.3.1 Mounting Components

- **Wall Mount**

Please use the wall mount with corner adapter or pole adapter according to different installation environments.

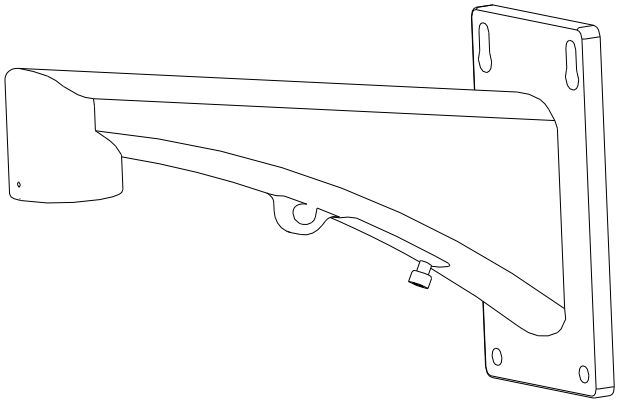


Figure 3-10 Wall Mount

- **Pole Adapter**

Please use the pole adapter with the wall mount in the pole mounting applications.

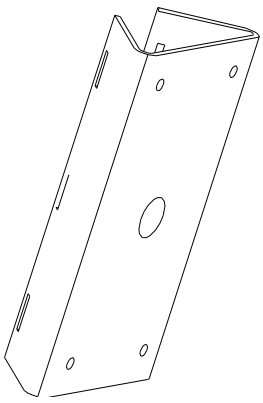


Figure 3-11 Pole Adapter

- **Pole Mounting Hoops**

Please use the with the pole adapter. The following dimensions of stainless steel hoop are optional:

ϕ59-82mm, ϕ84-108mm, ϕ103-127mm, ϕ130-152mm, ϕ155-178mm, ϕ180-203mm, ϕ194-216mm; Customized dimensions can also be provided according to your requirement.

Note: The dimensions of the pole mounting hoop must match with the diameter of the pole adapter.

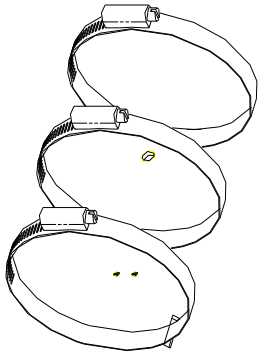


Figure 3-12 Stainless Steel Hoops

- **Mounting Accessories**

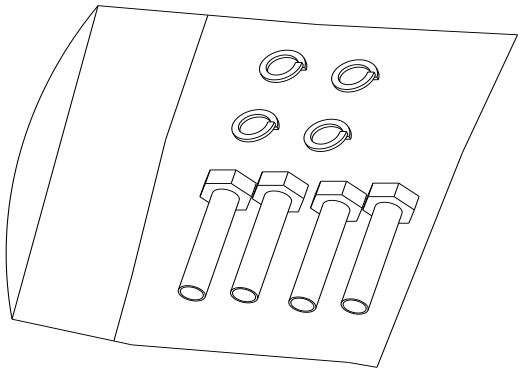


Figure 3-13 Hex Screws (M8×30) and Spring Washers

3.3.2 Pole Mounting

Before you start:

The pole mounting is applicable to the indoor/outdoor solid pole construction. The followings are the mandatory precondition for mounting:

- The mounting dimensions of the stainless steel hoops must meet the diameter of pole.
- The pole construction must be strong enough to withstand more than 8 times the weight of the dome and its accessories.

Steps:

1. Assemble the pole adapter.
   (1) Loosen the three stainless steel hoops with a screwdriver.
   (2) Insert them through the rectangle holes of the pole adapter.

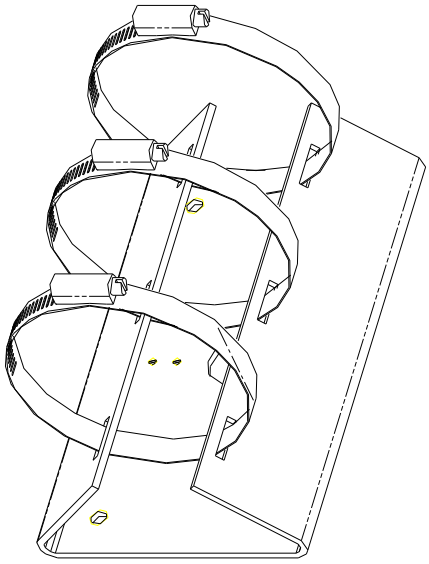


Figure 3-14 Assemble the Pole Adapter

2. Install the pole adapter.
   (1) Pull the control wire, video cable and power cable through the center hole.
   (2) Secure the three stainless steel hoops to the pole, and tighten the screws of the hoops with a screwdriver.

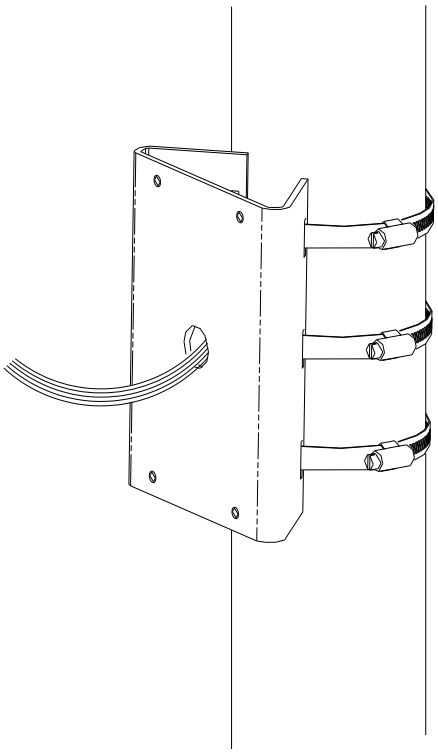


Figure 3-15 Install the Pole Adapter

Note: For outdoor applications, please adopt the water-proof measures.

3. Install the wall mount.
   (1) Attach the gasket then wall mount to the pole adapter.
   (2) Secure the wall mount to the pole adapter with 4 hex screws and the spring washers.

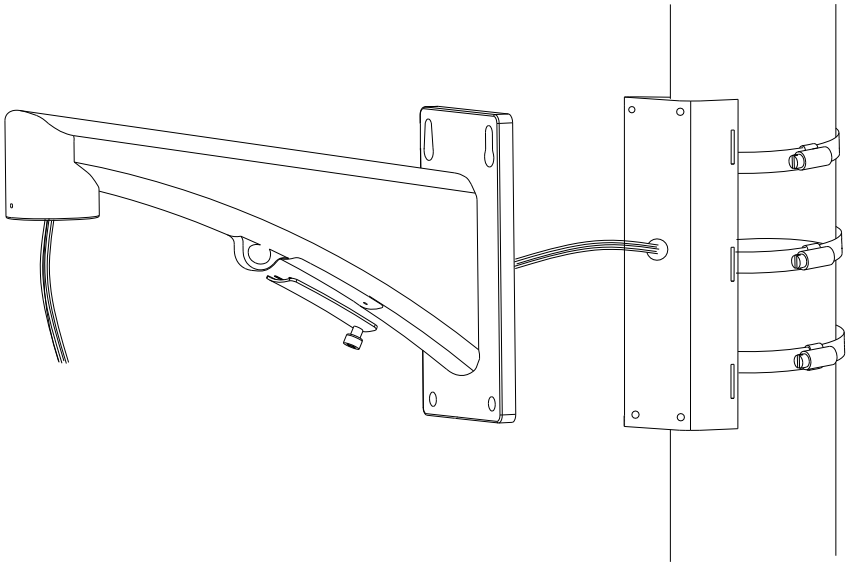


Figure 3-16 Install the Wall Mount

4. Install the speed dome to the mount. Please refer to *Section* ***1.1 Installation and Cabling*** for installation details.

Note: Follow the same instructions described above for the short-arm wall mounting. For outdoor applications, please adopt the water-proof measures. The short-arm wall mount is not recommended for outdoor applications.

3.4 In-ceiling Mounting Applications

3.4.1 Installation Conditions

Before you start:

The in-ceiling mounting is applicable to the indoor ceiling construction. The followings are the mandatory precondition for mounting:

- The height of the space above the ceiling must be more than 250mm.
- The thickness of the ceiling must ranges from 5 to 40mm.
- The ceiling must be strong enough to withstand more than 4 times the weight of the dome and its accessories.

3.4.2 In-ceiling Mounting

Steps

1. Rotate the lower dome counterclockwise to separate it from the back box as shown in Figure 3-17.
2. Remove the protective lens cover, foam and sticker from the dome drive.
3. Set the address and baud rate for the analog speed dome. Please refer to the Section 1.2 DIP Switch Settings for DIP switch settings.
4. Attach lower dome to the back box, and rotate clockwise to secure it.

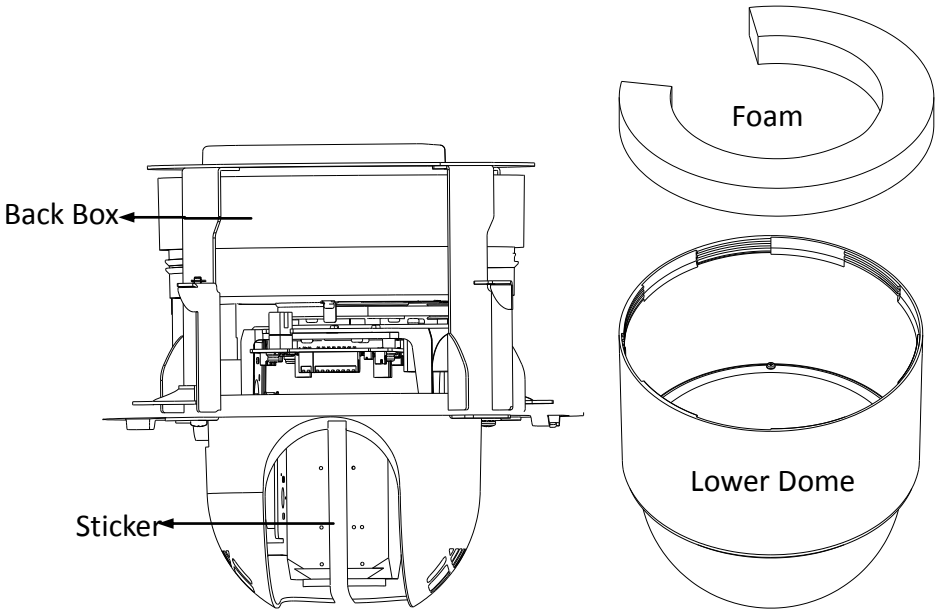


Figure 3-17 Remove the Protective Accessory

5. Drill a hole on the ceiling according to the drill template (supplied).

Note: ±2mm of the diameter of the circle is tolerable.

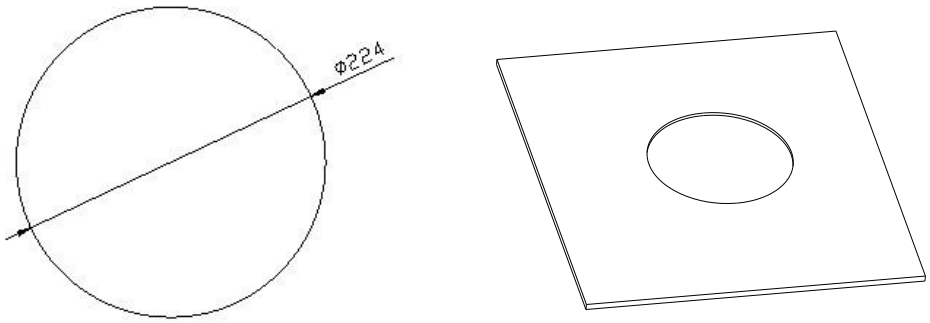


Figure 3-18 Draw and Cut Hole on the Ceiling

6. Connect the cables.

The video cable, control wire and network cable have been connected to the corresponding interfaces. Connect the power cable and the red LED indicator turns on when the power is on.

Note: Please turn the power off after checking the speed dome.

7. Install the speed dome.

Steps:

(1) Loosen the two lock screws on both sides of the back box and make the locks in internal position, as shown in the following figure:

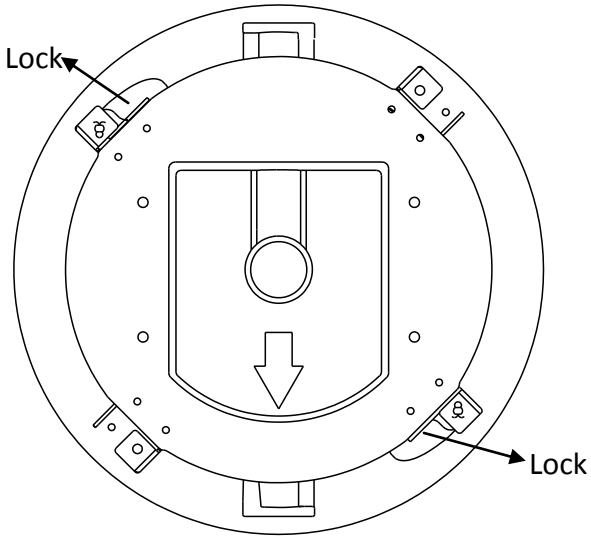


Figure 3-19 Locks and Lock Screws

(2) Push the back box into the mounting hole in the ceiling

(3) Tighten the lock screws with the screwdriver and the locks will automatically rotate outwards to secure the in-ceiling mount to the ceiling.

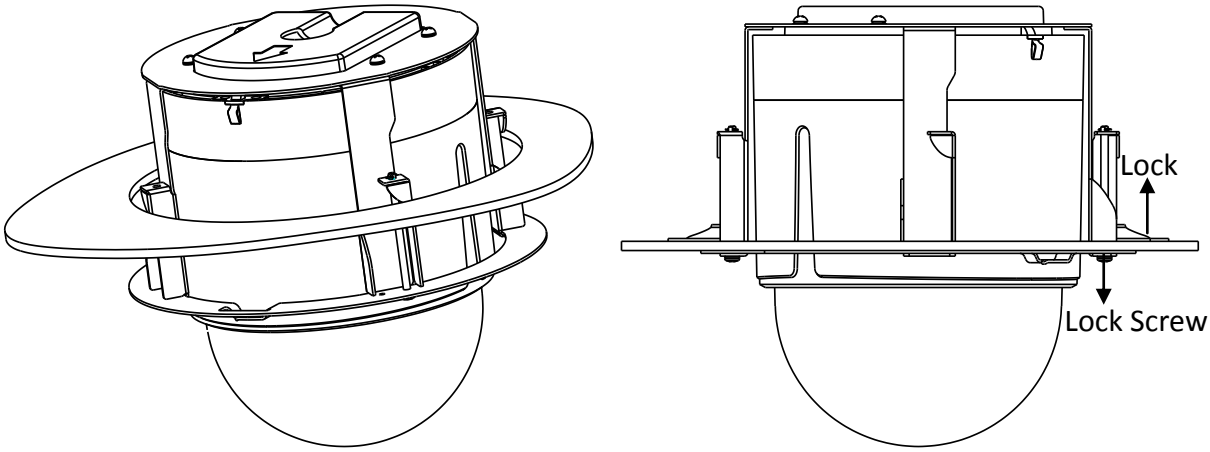


Figure 3-20 Install the back box

8. Install the trim ring.

Steps:

(1) Attach the trim ring to the lower dome and align the triangular notch of the trim ring with the arrow label on the in-ceiling mount.

(2) After having firmly placed the trim ring to the ceiling, rotate the trim ring in the direction of arrow to secure the trim ring in place.

Notes:

- Please remove the protective film on the lower dome after the installation is finished.
- In order to obtain clear video images, please wear the anti-static gloves when you install the speed dome.

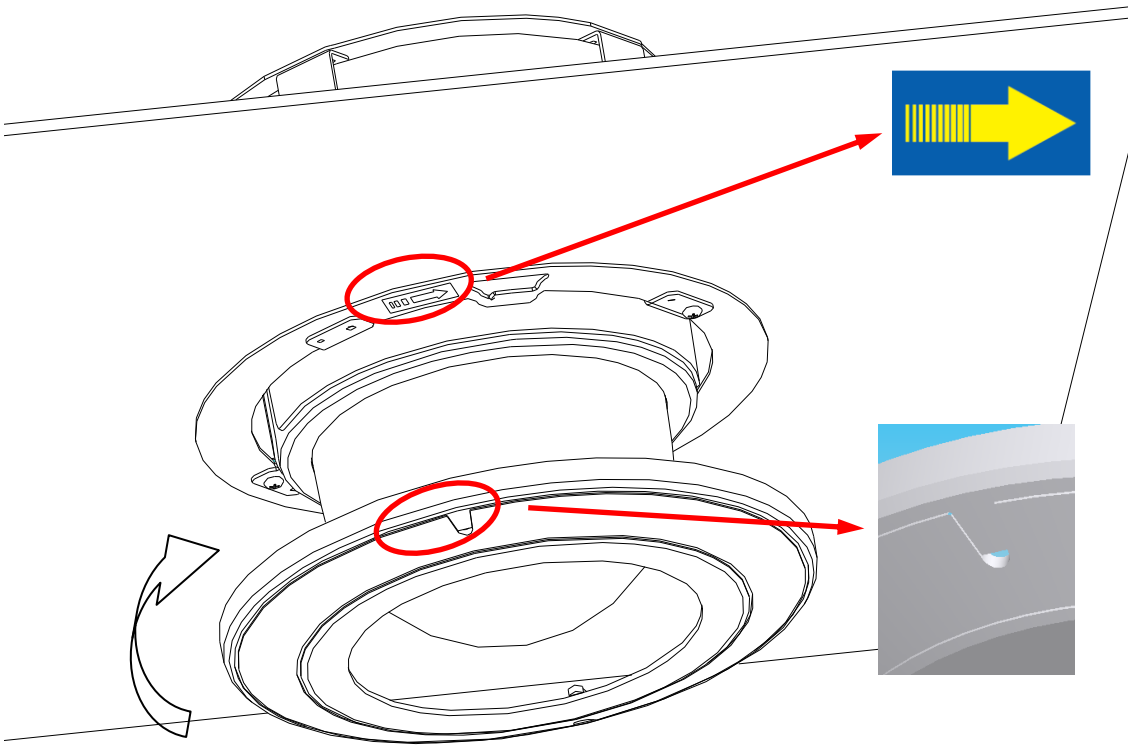


Figure 3-21 Install the Trim Ring

3.5 Ceiling Mounting Applications

Before you start:

The ceiling mounting is applicable to the indoor/outdoor solid ceiling construction. The followings are the mandatory precondition for ceiling mounting:

- The thickness of the ceiling must ranges from 5 to 40mm.
- The ceiling must be strong enough to withstand more than 4 times the weight of the dome and its accessories.

3.5.1 Wiring For Ceiling Mounting Applications

The cables of dome can be routed either from the top or the side of the back box, as shown in Figure 3-22. For the cables routed from the top of the back box, it is required to drill a cable hole in the ceiling.

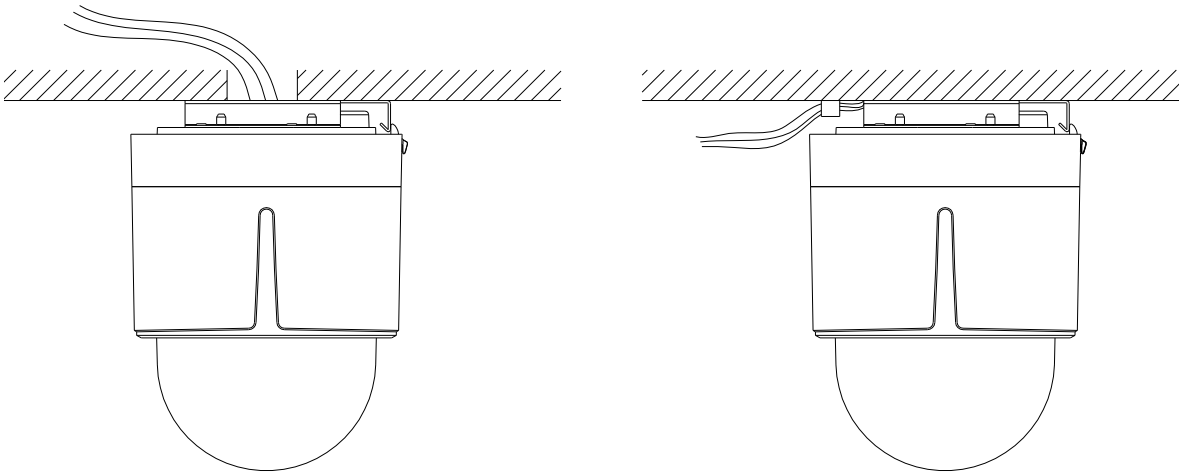


Figure 3-22 Cabling for Ceiling Mounting

3.5.2 Ceiling Mounting

Steps:

1. Rotate the lower dome counterclockwise to separate it from the back box. Refer to the Figure 3-17.
2. Remove the protective lens cover, foam and sticker from the dome drive.
3. Set the address and baud rate for the analog speed dome. Please refer to the Section 1.2 DIP Switch Settings for DIP switch settings.
4. Attach lower dome to the back box, and rotate clockwise to secure it.
5. Use the mounting base as a template to mark four screw holes onto the ceiling.
6. If you route cables from the top of the back box, mark the cable hole on the ceiling and drill a hole.

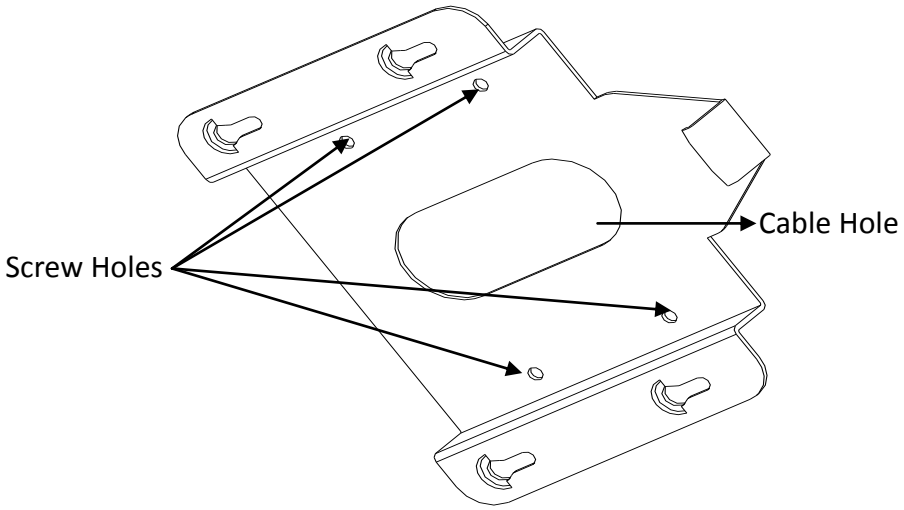


Figure 3-23 Mark the Screw Positions

7. Secure the mounting base to the ceiling with set screws.
   - If the speed dome is installed to the wooden wall, use the self-tapping screws to secure the mounting base.
   - If the dome is installed to the cement wall, drill three Φ5 mounting holes onto the wall

according to the hole locations, and then insert the cement screws into the holes and finally use self-tapping screws to secure the mounting base to the wall.

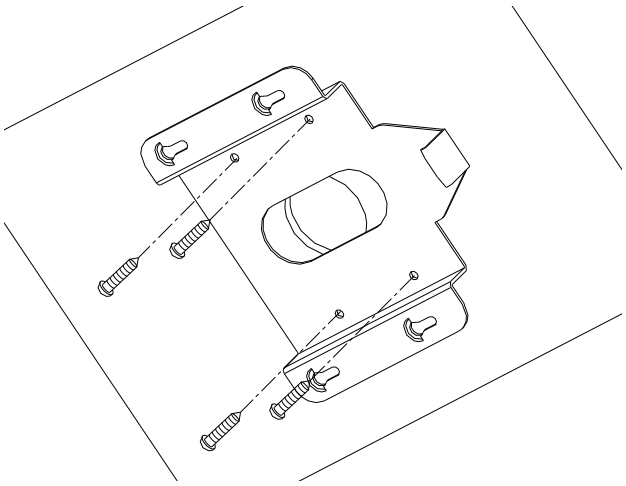


Figure 3-24 Secure the Mounting Base

8. Install the speed dome to the mounting base.

Steps:

(1) Route the cables for the speed dome. Align the bottom of the speed dome with the mounting base.

(2) Line up the direction of arrow with the spring end of the mounting base.

(3) Push the speed dome upwards and then forwards in the direction of arrow. When the speed dome is placed in position, the spring will automatically snap into the lock clip firmly. Refer to the following figure.

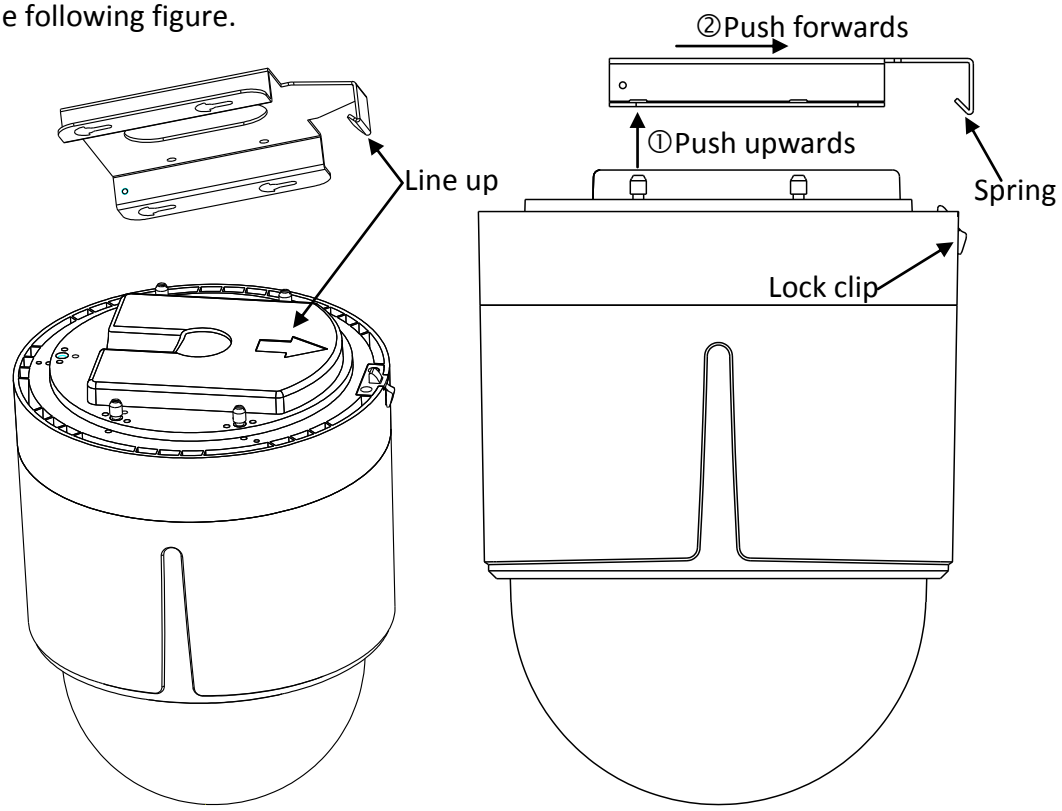


Figure 3-25 Attach the Back Box to the Mounting Base

Notes:

- Please remove the protective film on the lower dome after the installation is finished.
- Do not touch the bubble of the lower dome directly by hand. The image blurs otherwise.

Appendix

Appendix 1 Lightning & Surge Protection

This product adopts TVS plate lightning protection technology to avoid damage caused by pulse signal that is below 3000W, like instantaneous lighting stroke, surging, etc. According to the actual outdoor situation, necessary protection measures must be taken, besides ensuring the electrical safety.

- The distance between signal transmission wires and High-voltage equipment or high-voltage cable is at least 50m.
- Outdoor wiring should better be routed under eaves as much as possible.
- In the open field, wiring should be buried underground in sealed steel pipe, and the steel-pipe should be one-point grounding. Overhead routing method is forbidden.
- In strong thunderstorm area or high induction voltage areas (such as high-voltage transformer substation), high power lightning protection apparatus and lightning conductor are necessary to be added.
- The design of lightning protection and grounding of the outdoor devices and cables should be considered together with the lightning protection demand of buildings. It also must conform to the related national standards and industrial standards.
- The system should be equipotential grounded. The grounding equipment must conform to the demands of system anti-jamming and electrical safety both and it must not appear short circuit or mixed circuit with the zero conductor of strong grid. When the system is grounded alone, the resistance should be no more than 4Ω. The sectional area of the grounding cable should be no less than 25mm2. For grounding instructions, please refer to the Installation Manual of Speed Dome.

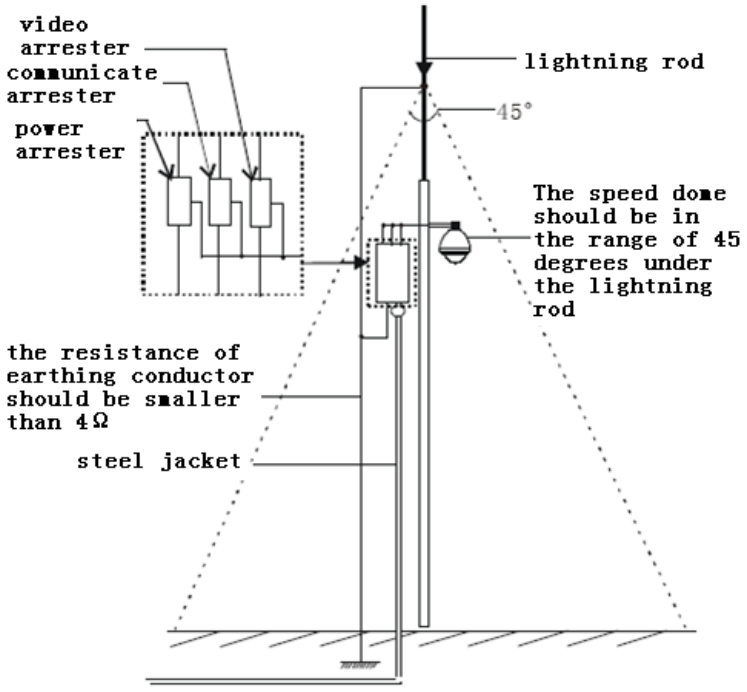


Figure A- 1 Lightning & Surge Protection

Appendix 2 RS485 Bus Connection

- General Property of RS485 Bus

According to RS485 industry bus standard, RS485 is a half-duplex communication bus which has 120Ω characteristic impendence, the maximum load ability is 32 payloads (including controller device and controlled device).

- RS485 Bus Transmission Distance

When using 0.56mm (24AWG) twisted-pair line, according to different baud rate, the maximum transmission distance theory table is shown as below:

Table A-1 Max. Distance of RS485 Transmission

Baud rate	Max Distance
2400BPS	1800m
4800BPS	1200m
9600BPS	800m

The transmission distance will be decreased if we use the thinner cable, or use this product under the strong electromagnetic interference situation, or there are lots of devices are added to the bus; on the contrary, the transmission distance will be increased.

- Connection Methods

  RS485 industry bus standard require daisy-chain connection method between any devices, both sides have to connect a 120Ω terminal resistance (show as Diagram 1), the simplified connection method is shown as diagram 2, but the distance of "D" should not be too long.

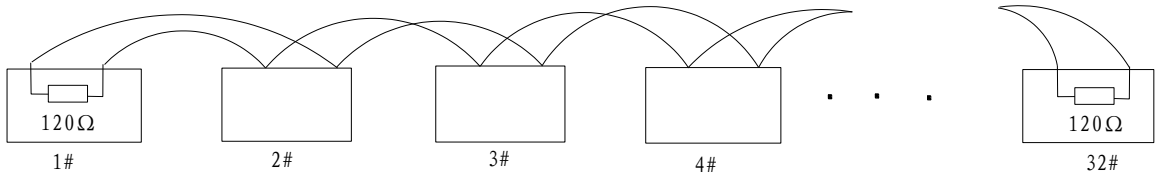


Figure A-2 RS485 Connection 1

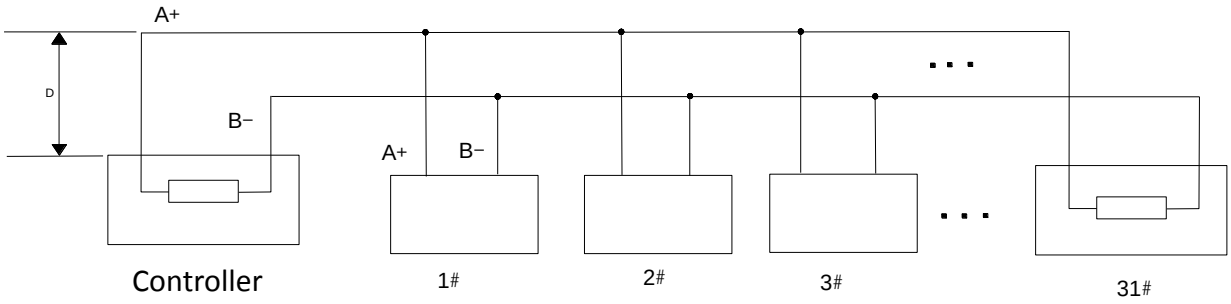


Figure A-3 RS485 Connection 2

- Problems in the Practical Application

Normally, users adopt star-shape connection method in construction, under this situation, the terminal resistors must be connected between two farthest devices (as Figure 4, 1# and 15#), but this connection method is not satisfy the requirement of the RS485 industry standard so that it will lead to some problems such as signal reflection, anti-jamming ability decline when the devices are

faraway. At this time, the dome will be uncontrollable, or self-running, etc.

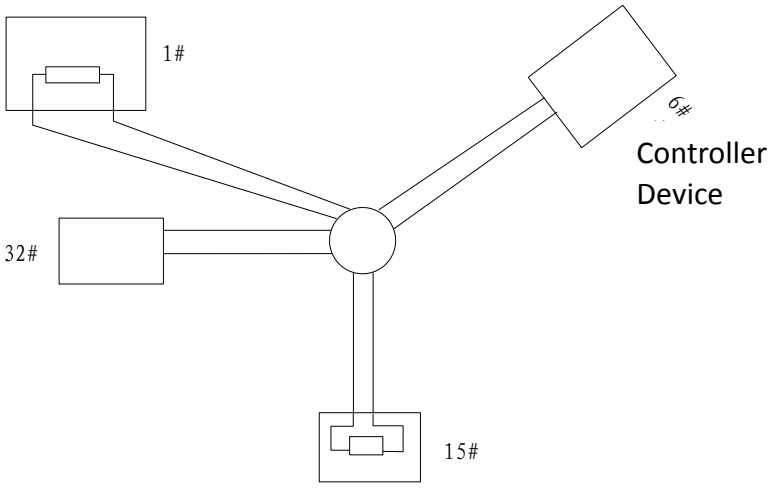


Figure A-4 Star Shape Connection

For such case, the best way is adding a RS485 distributor. This product can effectively change the star-shape connection to which satisfies the requirement of RS485 industry standard, in order to avoid those problems and improve the communication reliability. Show as figure 5.

RS485 Distributor

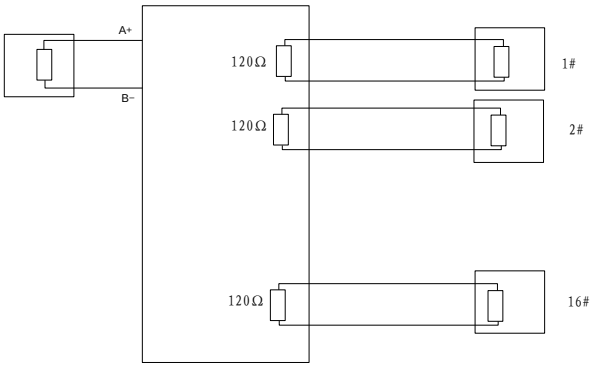


Figure A-5 RS485 Distributor

- Troubleshooting of RS485 communication

Problem	Possible Reasons	To Solve the Problem
The speed dome does the self-test action but cannot be controlled remotely.	1. The address or baud rate of the speed dome does not match with those of remote control device.	1. Adjust the address and baud rate of the remote control device to match with those of the speed dome.
	2. The wire RS485+ connects to the interface RS485- and wire RS485- connects to the interface RS485+.	2. Connect the wire RS485+ to the interface RS485+ and wire RS485- to the interface RS485-.
	3. The RS485 wire is disconnected.	3. Reconnect the RS485 wire tightly.
	4. RS485 wire is broken.	4. Change a RS485 wire.
The speed	1. The connection is loose.	1. Reconnect the RS485 wire

Problem	Possible Reasons	To Solve the Problem
dome can be controlled but not smoothly.		tightly.
	2. RS485+ or RS485-wire is broken.	2. Change a RS485 wire.
	3. The speed dome is too far away from the remote control device.	3. Add a terminal resistor.
	4. Too many speed domes are connected.	4. Add a RS485 distributor.

Appendix 3 24VAC Wire Gauge & Transmission Distance

The following table describes the recommended max. distance adopted for the certain wire gauge when the loss rate of 24VAC voltage is less than 10%. For the AC driven device, the maximum voltage loss rate is 10% allowable. For example, for a device with the rating power of 80VA which is installed at a distance of 35 feet (10m) away from the transformer, then 0.8000mm is required as the minimum wire gauge.

Distance (feet) / Wire Gauge (mm) / Power (va)	0.8000	1.000	1.250	2.000
10	283 (86)	451 (137)	716 (218)	1811 (551)
20	141 (42)	225 (68)	358 (109)	905 (275)
30	94 (28)	150 (45)	238 (72)	603 (183)
40	70 (21)	112 (34)	179 (54)	452 (137)
50	56 (17)	90 (27)	143 (43)	362 (110)
60	47 (14)	75 (22)	119 (36)	301 (91)
70	40 (12)	64 (19)	102 (31)	258 (78)
80	35 (10)	56 (17)	89 (27)	226 (68)
90	31 (9)	50 (15)	79 (24)	201 (61)
100	28 (8)	45 (13)	71 (21)	181 (55)
110	25 (7)	41 (12)	65 (19)	164 (49)
120	23 (7)	37 (11)	59 (17)	150 (45)
130	21 (6)	34 (10)	55 (16)	139 (42)
140	20 (6)	32 (9)	51 (15)	129 (39)
150	18 (5)	30 (9)	47 (14)	120 (36)
160	17 (5)	28 (8)	44 (13)	113 (34)
170	16 (4)	26 (7)	42 (12)	106 (32)
180	15 (4)	25 (7)	39 (11)	100 (30)
190	14 (4)	23 (7)	37 (11)	95 (28)
200	14 (4)	22 (6)	35 (10)	90 (27)

Appendix 4 Wire Gauge Standards

Bare Wire Gauge(mm)	American Wire Gauge AWG	British Wire Gauge SWG	Cross-sectional Area of Bare Wire(mm2)
0.750	21		0.4417
0.800	20	21	0.5027
0.900	19	20	0.6362
1.000	18	19	0.7854
1.250	16	18	1.2266
1.500	15	17	1.7663
2.000	12	14	3.1420
2.500			4.9080
3.000			7.0683